CLAIMS:

1. A polyethersulfone composition comprising structural units derived from a monomer mixture comprising bisphenol-A and at least 55 mole percent of 4,4'-biphenol based on total moles of diphenolic monomers, wherein the polyethersulfone has a minimum weight average molecular weight (M_w) defined by the relationship

M_w = ((-750) x mole percent structural units from biphenol monomer) + 105,000;

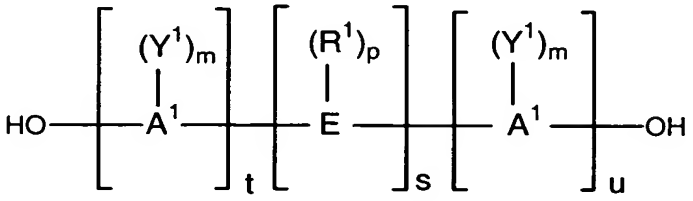
and wherein said polyethersulfone has a notched Izod impact strength value of greater than 470 Joules per meter as measured by ASTM D256.

2. The composition according to claim 1, wherein the polyethersulfone comprises structural units derived from 60-98 mole percent of the biphenol based on total moles of diphenolic monomers.

3. The composition according to claim 1, wherein the polyethersulfone comprises structural units derived from 65-85 mole percent of the biphenol based on total moles of diphenolic monomers.

4. The composition according to claim 1, wherein the polyethersulfone further comprises structural units derived from 5 mole % or less of at least one additional diphenolic monomer, based on total moles of diphenolic monomers.

5. The composition according to claim 4, wherein the additional diphenolic monomer is at least one member selected from the group consisting of a substituted derivative of 4,4'-biphenol and those monomers of the formula



wherein A^1 represents an aromatic group; E comprises a sulfur-containing linkage, sulfide, sulfoxide, sulfone; a phosphorus-containing linkage, phosphinyl, phosphonyl; an ether linkage; a carbonyl group; a tertiary nitrogen group; a silicon-containing linkage; silane; siloxy; a cycloaliphatic group; cyclopentylidene, cyclohexylidene, 3,3,5-trimethylcyclohexylidene, methylcyclohexylidene, 2-[2.2.1]-bicycloheptylidene, neopentylidene, cyclopentadecylidene, cyclododecylidene, adamantylidene; an alkylene or alkylidene group, which group may optionally be part of one or more fused rings attached to one or more aromatic groups bearing one hydroxy substituent; an unsaturated alkylidene group; or two or more alkylene or alkylidene groups connected by a moiety different from alkylene or alkylidene and selected from the group consisting of an aromatic linkage, a tertiary nitrogen linkage; an ether linkage; a carbonyl linkage; a silicon-containing linkage, silane, siloxy; a sulfur-containing linkage, sulfide, sulfoxide, sulfone; a phosphorus-containing linkage, phosphinyl, and phosphonyl;

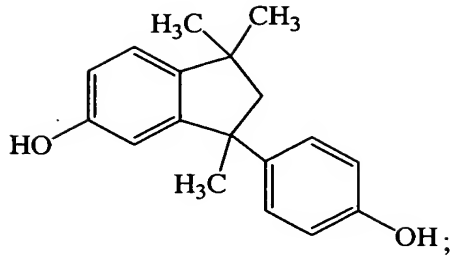
R^1 independently at each occurrence comprises a mono-valent hydrocarbon group, alkenyl, allyl, alkyl, aryl, aralkyl, alkaryl, or cycloalkyl;

Y^1 independently at each occurrence is selected from the group consisting of an inorganic atom, a halogen; an inorganic group, a nitro group; an organic group, a monovalent hydrocarbon group, alkenyl, allyl, alkyl, aryl, aralkyl, alkaryl, cycloalkyl, and an alkoxy group;

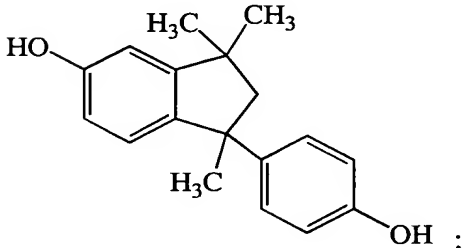
the letter "m" represents any integer from and including zero through the number of replaceable hydrogens on A^1 available for substitution;

the letter "p" represents an integer from and including zero through the number of replaceable hydrogens on E available for substitution;

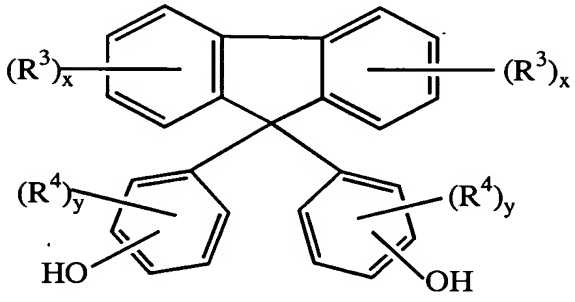
6. The composition according to claim 4, wherein the additional diphenolic monomer is at least one member selected from the group consisting of those monomers of the formulas



(i) ;

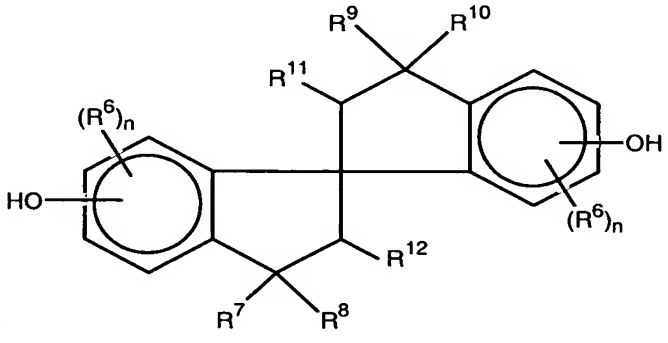


(ii) ;



(iii) ,

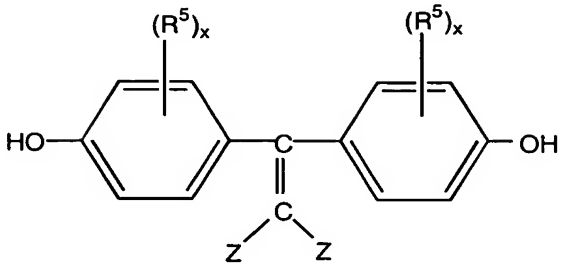
wherein each R^3 and R^4 is independently selected from monovalent alkyl, aryl and halogen radicals; and the values for the parameters x and y are each independently selected from positive integers having a value of from 0 to 3 inclusive;



(iv)

wherein each R^6 is independently selected from monovalent alkyl, aryl and halogen radicals; each R^7, R^8, R^9, and R^{10} is independently C_{1-6} alkyl; each R^{11} and

R^{12} is independently H or C_{1-6} alkyl; and each n is independently selected from positive integers having a value of from 0 to 3 inclusive; and

(v) 

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wherein each R^5 is independently at each occurrence hydrogen, chlorine, bromine, alkyl or a C_1-C_{30} monovalent hydrocarbon or hydrocarbonoxy group, and each Z is hydrogen, chlorine or bromine, subject to the provision that at least one Z is chlorine or bromine, and the value for the parameter x is independently at each occurrence selected from positive integers having a value of from 0 to 3 inclusive.

7. The composition according to claim 6, wherein the additional diphenolic monomer is at least one member selected from the group consisting of 9,9-bis(4-hydroxyphenyl) fluorene and 2,2,2',2'-tetrahydro-3,3,3',3'-tetramethyl-1,1'-spirobi[1H-indene]-6,6'-diol.

8. The composition according to claim 1, wherein the polyethersulfone has a minimum weight average molecular weight in a range of between about 30,000 and about 66,000.

9. The composition according to claim 1, wherein the polyethersulfone has a minimum weight average molecular weight in a range of between about 32,000 and about 64,000.

10. The composition according to claim 1, wherein the polyethersulfone has a minimum weight average molecular weight in a range of between about 34,000 and about 60,000.

11. The composition according to claim 1, wherein the glass transition temperature is in the range between about 190°C and about 225°C.

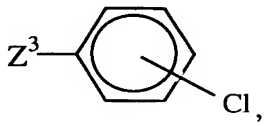
12. The composition according to claim 1, wherein the glass transition temperature is greater than about 205°C.

13. The composition according to claim 1, wherein the polyethersulfone has a melt viscosity of less than about 4,500 pascal·seconds as measured at 340°C.

14. The composition according to claim 1, wherein the polyethersulfone has a melt viscosity in a range of between about 1,500 pascal·seconds and about 3,000 pascal·seconds as measured at 340°C.

15. The composition according to claim 1, wherein the polyethersulfone further comprises structural units derived from at least one chain terminating agent.

16. The composition according to claim 15, wherein the chain terminating agent is at least one member selected from the group consisting of chloro-N-arylphthalimides, chloro-N-alkylphthalimides, alkyl halides, alkyl chlorides, aryl halides and aryl chlorides of formula:



wherein the chlorine substituent is in the 3- or 4-position, and Z^3 comprises a substituted or unsubstituted alkyl or aryl group.

17. The composition according to claim 16, wherein the chain terminating agent is at least one member selected from the group consisting of 4-chlorodiphenylsulfone, 3-chloro-N-phenylphthalimide, 3-chloro-N-methylphthalimide, 4-chloro-N-phenylphthalimide and 4-chloro-N-methylphthalimide.

18. A polyethersulfone composition comprising structural units derived from 4,4'-biphenol and bisphenol-A in a molar ratio of about 60 : 40 and having a weight average molecular weight of at least about 60,000;

or having structural units derived from 4,4'-biphenol and bisphenol-A in a molar ratio of about 70 : 30 and having a weight average molecular weight of at least about 52,000; or

having structural units derived from 4,4'-biphenol and bisphenol-A in a molar ratio of about 80 : 20 having a weight average molecular weight of at least about 45,000,

wherein said polyethersulfone has a notched Izod impact strength value of greater than 470 Joules per meter as measured by ASTM D256 and a melt viscosity of less than about 4,500 pascal·seconds as measured at 340°C.

19. An article comprising the composition of claim 1.

20. An article comprising the composition of claim 18.

21. A method for the synthesis of a polyethersulfone comprising structural units derived from a monomer mixture comprising bisphenol-A and at least 55 mole percent of 4,4'-biphenol based on total moles of diphenolic monomers, wherein the said polyethersulfone has a minimum weight average molecular weight (M_w) defined by the relationship

M_w = ((-750) x mole percent structural units from biphenol monomer) + 105,000;

and wherein the said polyethersulfone has a notched Izod impact strength value of greater than 470 Joules per meter;

wherein said method comprises the steps of:

a. contacting dialkali metal salts of said bisphenol-A and 4,4'-biphenol in a substantially dry solvent with at least one dihalodiarylsulfone in the presence of a phase transfer catalyst; and

b. quenching the reaction with an acidic quencher.

22. The method according to claim 21 wherein the solvent is at least one member selected from the group consisting of ortho-dichlorobenzene,

dichlorotoluene, 1,2,4-trichlorobenzene, diphenyl sulfone, phenetole, anisole and veratrole.

23. The method according to claim 22 wherein the solvent is ortho-dichlorobenzene.

24. The method according to claim 21 wherein the salts are disodium salts.

25. The method according to claim 21 wherein the phase transfer catalyst is hexaethylguanidinium chloride.

26. The method according to claim 21 wherein the dihalodiarylsulfone is 4,4'-dichlorodiphenylsulfone.

27. The method according to claim 21 further comprising the step of isolating said polyethersulfone.

28. The method according to claim 21, wherein the polyethersulfone has a melt viscosity of less than about 4,500 pascal·seconds as measured at 340°C.

29. A method for the synthesis of a polyethersulfone comprising structural units derived from a monomer mixture comprising bisphenol-A and at least 55 mole percent of 4,4'-biphenol based on total moles of diphenolic monomers, wherein the polyethersulfone has a minimum weight average molecular weight (M_w) defined by the relationship

M_w = ((-750) x mole percent structural units from biphenol monomer) + 105,000;

and wherein the polyethersulfone has a notched Izod impact strength value of greater than 470 Joules per meter; and wherein the polyethersulfone has a melt viscosity of less than about 4,500 pascal·seconds as measured at 340°C;

wherein said method comprises the steps of:

a. contacting dialkali metal salts of said bisphenol-A and 4,4'-biphenol in a substantially dry solvent with 4,4'-dichlorodiphenylsulfone in the presence of hexaethylguanidinium chloride as a phase transfer catalyst; and

b. quenching the reaction with an acidic quencher.

30. The method according to claim 29 further comprising the step of isolating said polyethersulfone.